IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent Application of: Docket No.: P13378D

Kjetil Johannessen

Serial No.: 10/678,026 Group Art Unit: 1731

Filed: September 30, 2003 Examiner: John M. Hoffmann

For: **METHOD OF SELF-ALIGNING OPTICAL WAVEGUIDES**

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF UNDER 37 C.F.R. §41.37 (a)

Sir:

Appellants have filed a timely Notice of Appeal from the Final Office Action, on January 17, 2006. A single copy of this brief is provided pursuant to 35 U.S.C. § 41.37(a).

A check for $500 to cover the fee for filing this appeal brief is attached hereto. If additional extensions of time are necessary, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required therefor (including any additional fees for filing of the Appeal Brief) are hereby authorized to be charged, or overpayment credited, to Intel Deposit Account 50-0221.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to:

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On: 4/17/2006

Signature: Julie Dussault 4/17/2006
Julie Dussault Date

REAL PARTY IN INTEREST

The real party in interest in this appeal is Intel Corporation, assignee of the entire interest in the above-identified application.

RELATED APPEALS AND INTERFERENCES

The Appellants, their legal representatives and the Assignee are not currently aware of any appeal that may directly affect or be indirectly affected by or have some bearing on the Board's decision in this appeal. Attached hereto is a Related Proceedings Appendix showing no related appeals or interferences.

STATUS OF THE CLAIMS

Claims 1 – 21, 26, and 34-40 are cancelled.

Claims 22-25 and 27-33 are currently rejected.

Claims 22-25 and 27-33 are the subject of this appeal.

No claims have been allowed. The claims in issue are attached in the "Claims Appendix" attached herewith.

STATUS OF AMENDMENTS

All prior amendments to the application have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

Briefly, embodiments of the present invention are directed to methods for forming alignment dots on waveguides. A first waveguide and a second waveguide may be aligned by applying an alignment dot on end surfaces of the cores of first and second waveguides. Various methods are disclosed as recited in claims 22 and 33. Once formed the alignment dots may be positioned in close proximity to one another, and are melted together. Surface tension pulls the first and second waveguides into alignment. This is disclosed for example on page 3, lines 5-7 of the patent application.

Independent Claim 22

The invention recited by claim 22 is directed to a method of forming a self-aligning alignment dot on an end surface of a waveguide for self-aligning the waveguide with a second waveguide **(page 3, lines 4-7; page 4, line 2; Fig. 1, items 30 and 40)**, the method comprising:

applying a mask to an end surface of the waveguide **(page 5, lines 11-15; Fig. 4A, item 210)**;

ablating a portion of the mask by exposing the mask to a high energy light beam traveling through the waveguide to create a mask opening **(page 5, lines 16-19; Fig. 4B, items 222 and 230)**; and

filling the mask opening with an optical material to form a self-aligning dot **(page 5, lines 22 et seq.; Figure 4D, item 240)**,

the optical material having a melting point and when melted in the proximity of a second alignment dot on a second waveguide, surface tension pulls the waveguide and the second waveguide into alignment with each other **(page 3, lines 6-8)**.

Independent Claim 33

Claim 33 is directed to a method of forming a self-aligning alignment dot on an end surface of a waveguide **(page 3, lines 4-7; page 4, line 2; Fig. 1, items 30 and 40)**, the method comprising:

applying a photo sensitive optical material to an end surface of the waveguide **(page 4, lines 1-3; Fig. 3B, item 110)**;

exposing the photo sensitive optical material to a light beam **(Fig 3B, item 120)** traveling through the waveguide, the light beam having a wavelength that cures the photo sensitive optical material to create a cured portion of the photo sensitive optical material and an uncured portion of the photo sensitive optical material **(page 5, lines 1-6; Figure 3C)**; and

removing the uncured portion of the photo sensitive optical material, the cured portion of the photosensitive material forming the alignment **dot (page 5, lines 7-10; Fig. 3D),**

the alignment dot having a melting point and when melted in the proximity of a second alignment dot on a second waveguide, surface tension pulls the waveguide and the second waveguide into alignment with each other **(page 3, lines 6-8)**.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 22-25, 29, and 33 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,237,630 to Hogg.

2. Claims 22-25, 28, and 31-33 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,879,571 to Kalman.

3. Claims 25-28 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hogg.

ARGUMENT

REJECTION UNDER 35 U.S.C. 102(b)
Claims 22-25 and 29, and 33 based on Hogg

Appellants appeal the rejection of all pending claims, which is based on the Examiner's position that the method is indistinguishable from that taught by either Hogg or Kalman.

With regard to Hogg, the Examiner comments are taken in the order presented by the Examiner in the Final Office Action.

On page 2 of the final Office Action, the Examiner contends that the "***invention is disclosed in the paragraph spanning cols. 7-8 of Hogg. See also Figure 8***...".

However, this paragraph to which the Examiner refers actually states:

"A technique using a positive photoresist material is shown in FIG. 8, wherein a thin layer of photoresist material is first applied to the endface of a cleaved fiber as shown in FIG. 8b. The core region is exposed by launching light down the fiber thus ensuring only the core region is exposed as shown in FIG. 8c. Alternatively, the core region of the fiber can be exposed from the outside using a mechanical mask to block off unwanted light, or by focusing light onto the core region. The photoresist material is then developed, washing away photoresist material from the core region, leaving the core exposed as shown in FIG. 8d. A reflective metal or dielectric layer is then coated over the entire endface of the fiber 8e. The photoresist material is then dissolved thus lifting the deposited reflective layer from the cladding region. A localised mirror over the core region is then achieved as shown in FIG. 8f."(emphasis added). [Hogg column 7, line 63 et seq.].

Hogg appears to be directed to putting a reflector (e.g. mirror) at a fiber joint splice (see title). To that end, the passage relied upon by the Examiner appears to be directed to using a photoresist method to form the mirror. This passage does not anticipate, teach or suggest:

"***form a self-aligning dot, the optical material having a melting point and when melted in the proximity of a second alignment dot on a second waveguide***" as recited in independent claims 22 and 33.

Nothing in Hogg's Figure 8 or the corresponding text addresses the method used for aligning two fibers. Indeed Figure 8g appears to show two fibers with a reflector at the splice joint, but this is unrelated to applicant's claimed invention.

The Board is directed to Hogg column 5, lines 25-35 where alignment of the fibers is discussed. It is noted that this was pointed out to the Examiner, but was not responded to. Hogg column 5, lines 25-35 states:

"*The stress regions in the fiber 12 define the two polarization axes. These axes must be aligned prior to fusion splicing in order to preserve linear polarization through the semireflective splice 18. This is accomplished by several known methods, including:*

i) monitoring the state of polarization of light propagating through the two fibers 12 prior to fusion splicing;

ii) visually aligning the stress regions visible at the fiber 12 endface 22; or

iii) visually aligning the stress regions as viewed perpendicularly through the side of the fiber."

Of the three alignment methods taught by Hogg, not one remotely suggests the claimed melting of a "self aligning dot" as does Appellant's claimed invention.

On page 2, last paragraph and continuing on to page 3 of the Final Office Action, the Examiner appears to take issue with the term "ablating" stating that it is "not defined in the specification". The Examiner then goes on to give it a very broad definition and no presumably patentable weight.

The Board is referred to page 6, second full paragraph to page 9, line 5, discusses and defines various "ablating" methods such as chemically treating the waveguide with saline or hydrofluoric acid...followed by photo ablation. Page 6 and 9 (i.e. 1/3 of the entire specification) is directed to "ablating". Thus, for the Examiner to "ablating is not defined in the specification" is simply incorrect.

On the middle of page 3 of the Final Office Action the Examiner argues "***As to the new intended use, Examiner sees nothing which would prevent one from using the dot to self align with another fiber as claimed. This is NOT to be interpreted as***

Examiner saying such would have been obvious or that the prior art teaches doing such".

First, it is noted to the Board that it is unclear to Appellant why the Examiner is arguing "new intended use". The invention is generally directed to methods of making alignment dots and aligning two fibers with the dots. Since Hogg does not teach alignment dots at all, the "new intended use" reasoning has no basis.

Second, the Examiner states that he should not be interpreted as saying such [Hogg?] would be obvious. Thus, if Appellants are not to interpret the Examiner's arguments as the prior art being obvious, then why is the claims still rejected under Hogg under 102. If Hogg does not render the claims obvious (103), then it is certainly cannot render the claims anticipated under 102 as the Examiner has done.

The Board is thus respectfully requested to reverse the Examiner at least with regard to the rejections based on Hogg.

REJECTION UNDER 35 U.S.C. 102(b)
Claims 22-25 and 29, and 33 based on Kalman

Appellants appeal the rejection of all pending claims, which is based on the Examiner's position that the method is indistinguishable from that taught by Kalman.

With regard to Kalman, Kalman is directed to a method for forming lenses on optical waveguides using masks as shown for Example in Figures 6A-6F. Again, this is unrelated to forming alignment dots with a material having a melting point to create a surface tension for alignment as now recited in the claims. Thus, the claims as amended are neither anticipated by the prior art of record nor rendered obvious.

The Examiner notes broad portions of Hogg (e.g. "the paragraphs spanning columns 7-8 of Hogg", and Figures 8A-G). However, none of this teaches or suggests a self aligning dot made of a material that is melted as claimed. The Examiner states that "As to the dot being a 'self-aligning dot' it is deemed that such an intended use of the dot does not define over Hogg". It is respectfully submitted that this argument, is irrelevant since Hogg does not teach or suggest such a dot in the first place.

In Appellant's last response, Appellants specifically requested that the Examiner to point out the alignment dots which are taught to be melted in the Figures and text of Kalman or withdraw the rejection.

The Examiner did neither. It is impossible for Appellants to more particularly address such a vague rejection to the base claims.

With regard to dependent claim 25, the Examiner seems to fixate on the definition of an "optical probe" and then begins to go off on tangents concerning "optical probes for medical purposes" and "optical probes for mine shafts" or may be "the size of a standard light bulb". Appellant's have no idea where the Examiner is coming from. Medical purposes? Mine Shafts? Standard Light bulbs?

The claimed probe is clearly shown in Figure 1, item 60, and discussed on the bottom of page 6 and the top of page 7 of the application. The probe 60 is defined as one "that may be coupled to the waveguide with less than approximately 3 microns of cladding". Thus, taking claim 25 in context of the specification, it is clear that the claimed probe is unrelated to medical purposes, mine shafts, or light bulbs.

Further, its unclear what difference this makes anyway since Kalman, the reference relied upon in making this rejection, is also unrelated to medical purposes, mine shafts, or standard light bulbs.

Appellants respectfully appeal to the Board, that these rejections are too remote and too far off-point from the claimed subject matter to even form logical response. As such, the Board is respectfully requested to reverse the Examiner on the rejections based on Kalman.

REJECTION UNDER 35 U.S.C. 103(a)
Claims 25-28 based on Hogg

With regard to dependent claim 25, the Examiner provides a "cut and paste" form paragraphs of §103 and then the 4 factual inquiries set forth in the well known Graham v John Deere Co., 383 US 1 (1966).

Then the Examiner states that Hogg does not mention a probe. Then the Examiner starts talking about "adjustable light sources". And concludes that "adjustability is not a patentable invention" (emphasis added).

The Boards attention is drawn to claim 25 which recites "The method of claim 24 further comprising: coupling an optical probe to the waveguide to provide the ablating light". This has nothing to do with "adjustability". So, here again, the Examiner's rejection and reasoning is so far removed from the language of the claims, as well as the teachings of the prior art, there can be no logical response.

With regard to claim 26, the Examiner cuts and pastes a form paragraph quoting MPEP 2144.04 directed to the "rearrangement of parts. However, claim 26 had been previously cancelled so it is unclear why the Examiner maintains this rejection other than it was copied from previous Office Actions.

With regard to claim 27 the Examiner reasons that the claimed "probe region" may be analogous to the "three dimensional space encompassed by Hogg".

With regard to claim 30, this claim recites "The method of claim 22, wherein the optical material comprises a polymer or a sol-gel". To reject this claim, the Examiner takes Official Notice that "it is conventional to make multiple short fiber devices , from a single long fiber; and to make them sequentially, and separate them from the stock fiber..."

This makes absolutely no sense and is completely unrelated to either the rejected claim or the prior art.

The PTO has the initial burden under section 103 to establish a prima facie case of obviousness. See, In re Piasecki, 223 USPQ 785, 788; In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). The PTO can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. Ashland Oil, Inc. V. Delta Resins & Refractories, Inc., 776 F.2d 281, 297 n.24, 227 USPQ 657, 667 n.24 (Fed. Cir. 1985); ACS Hosp. Sys., Inc. v. Monteviore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). Here, it is respectfully submitted that the Examiner has failed to show *prima facie* obviousness.

As such, it is respectfully requested that the Board reverse the Examiner and allow all claims.

CONCLUSION

In summary neither Hogg nor Kalman, alone or combined teach or suggest the features of the claimed invention. Therefore, the references do not provide evidence that would support a conclusion of anticipation under 35 U.S.C. §102(b) or a conclusion of obviousness under 35 U.S.C. §103(a). Appellants thus respectfully submit that the rejections of claims 22-25 and 27-33 are in error and that reversal is warranted in this case.

Respectfully submitted,

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CLAIMS APPENDIX

A copy of the claims involved in the appeal is provided below.

1-21 (cancelled).

22 (previously presented). A method of forming a self-aligning alignment dot on an end surface of a waveguide for self-aligning the waveguide with a second waveguide, the method comprising:

applying a mask to an end surface of the waveguide;

ablating a portion of the mask by exposing the mask to a high energy light beam traveling through the waveguide to create a mask opening; and

filling the mask opening with an optical material to form a self-aligning dot, the optical material having a melting point and when melted in the proximity of a second alignment dot on a second waveguide, surface tension pulls the waveguide and the second waveguide into alignment with each other.

23 (original). The method of claim 22 further comprising:

removing the mask from the end surface of the waveguide.

24 (original). The method of claim 22, wherein ablating a portion of the mask further comprises:

ablating the portion of the mask with an ablating light.

25 (original). The method of claim 24 further comprising:

coupling an optical probe to the waveguide to provide the ablating light.

26 (cancelled).

27 (original). The method of claim 25 further comprising:

positioning the optical probe in a probe region above the waveguide, the probe region having an upper cladding of approximately 0-3 microns.

28 (original). The method of claim 25, wherein the ablating light is an UV light.

29 (original). The method of claim 22, wherein the waveguide is an optical fiber.

30 (original). The method of claim 29 further comprising:

aligning a far end of the optical fiber to a light source;

forming the self-aligning alignment dot on an opposite end of the optical fiber;

cutting off a segment of optical fiber with the self-aligning alignment dot; and

forming another self-aligning alignment dot on the opposite end of the optical fiber without re-aligning the far end of the optical fiber.

31 (original). The method of claim 22, wherein the waveguide is a planar waveguide.

32 (original). The method of claim 22, wherein the optical material comprises a polymer or a sol-gel.

33 (previously presented). A method of forming a self-aligning alignment dot on an end surface of a waveguide, the method comprising:

applying a photo sensitive optical material to an end surface of the waveguide;

exposing the photo sensitive optical material to a light beam traveling through the waveguide, the light beam having a wavelength that cures the photo sensitive optical material to create a cured portion of the photo sensitive optical material and an uncured portion of the photo sensitive optical material; and

removing the uncured portion of the photo sensitive optical material, the cured portion of the photosensitive material forming the alignment dot, the alignment dot having a melting point and when melted in the proximity of a second alignment dot on a second waveguide, surface tension pulls the waveguide and the second waveguide into alignment with each other.

34-40. (cancelled).

EVIDENCE APPENDIX

This section lists evidence submitted pursuant to 35 U.S.C. §§1.130, 1.131, or 1.132, or any other evidence entered by the Examiner and relied upon by Appellant in this appeal, and provides for each piece of evidence a brief statement setting forth where in the record that evidence was entered by the Examiner. Copies of each piece of evidence are provided as required by 35 U.S.C. §41.37(c)(ix).

NO.	EVIDENCE	BRIEF STATEMENT SETTING FORTH WHERE IN THE RECORD THE EVIDENCE WAS ENTERED BY THE EXAMINER
1	N/A	N/A

RELATED PROCEEDINGS APPENDIX

Pursuant to 35 U.S.C. §41.37(c)(x), copies of the following decisions rendered by a court of the Board in any proceeding identified above under 35 U.S.C. §41.37(c)(1)(ii) are enclosed herewith.

NO.	TYPE OF PROCEEDING	REFERENCE NO.	DATE
1	N/A	N/A	N/A